

IN THE CLAIMS

1-31. (Canceled)

32. (New) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first bone engagement surface securable to a first vertebral body, the first bone engagement surface comprising at least one bone engagement feature;

a second bone engagement surface securable to a second vertebral body, the second bone engagement surface comprising at least one bone engagement feature; and

an articulating structure comprising first and second articulating surfaces positioned between the first and second bone engagement surfaces, wherein the articulating structure nonresiliently urges the first and second bone engagement surfaces toward a relative anterior/posterior orientation that provides a preferred lordotic angle between the first and second vertebral bodies.

33. (New) The intervertebral disc prosthesis of claim 32, wherein an anterior portion of the articulating structure has a greater thickness than a posterior portion of the articulating structure to correct lordosis, wherein the preferred lordotic angle is greater than zero.

34. (New) The intervertebral disc prosthesis of claim 32, wherein the preferred lordotic angle is selected from the group consisting of 0, 3 and 6 degrees.

35. (New) The intervertebral disc prosthesis of claim 32, further comprising a first end plate comprising the first bone engagement surface, the first end plate further comprising the first articular surface, wherein the first articular surface cooperates with the second articular surface to urge the first and second bone engagement surfaces toward the anterior/posterior orientation.

36. (New) The intervertebral disc prosthesis of claim 35, further comprising a second end plate comprising the second bone engagement surface, the second end plate further comprising the second articular surface, wherein the second articular surface cooperates with the first articular surface to urge the first and second bone engagement surfaces toward the anterior/posterior orientation.

37. (New) The intervertebral disc prosthesis of claim 32, wherein the articular structure comprises a nucleus formed separately from the first and second bone engagement surfaces, the nucleus comprising the first and second articular surfaces.

38. (New) The intervertebral disc prosthesis of claim 37, wherein the first end plate comprises a third articulating surface positioned to articulate with the first articular surface of the nucleus, and the second end plate comprises a fourth articulating surface positioned to articulate with the second articular surface of the nucleus.

39. (New) The intervertebral disc prosthesis of claim 37, wherein an anterior portion of the nucleus has a greater thickness than a posterior portion of the nucleus to correct lordosis, wherein the preferred lordotic angle is greater than zero.

40. (New) The intervertebral disc prosthesis of claim 32, further comprising at least one resilient body positioned adjacent to the articulating structure, wherein the resilient body cooperates with the articulating structure to permit a gradual stopping motion between the first and second vertebral bodies.

41. (New) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first essentially flat bone engagement surface securable to a first vertebral body;

a second essentially flat bone engagement surface securable to a second vertebral body;

a first articular surface comprising a first orientation feature; and

a second articular surface that articulates with the first articular surface, the second articular surface comprising a second orientation feature that cooperates with the first orientation feature to urge the first and second bone engaging surfaces toward a preferred orientation of the first bone engagement surface relative to the second bone engagement surface about at least one axis.

42. (New) The intervertebral disc prosthesis of claim 41, wherein the first orientation feature comprises a first flattened section formed on the first articular surface.

43. (New) The intervertebral disc prosthesis of claim 42, wherein the first flattened section is positioned adjacent to and contiguous with a first curved section of the first articular surface, wherein the first flattened section has a radius of curvature different from a radius of curvature of the first curved section.

44. (New) The intervertebral disc prosthesis of claim 42, wherein the second orientation feature comprises a second flattened section formed on the second articular surface.

45. (New) The intervertebral disc prosthesis of claim 44, wherein the first flattened section comprises a partial cylinder positioned between and contiguous with first and second curved sections of the first articular surface, wherein the second flattened section comprises a cylindrical surface shaped to mate with the partial cylinder.

46. (New) The intervertebral disc prosthesis of claim 41, further comprising a nucleus positioned between the first and second bone engagement surfaces, the nucleus comprising at least one of the first and second orientation features.

47. (New) The intervertebral disc prosthesis of claim 46, wherein the nucleus comprises the second articulating surface.

48. (New) The intervertebral disc prosthesis of claim 41, further comprising a first end plate securable to the first vertebral body, wherein the first end plate comprises the first bone engagement surface.

49. (New) The intervertebral disc prosthesis of claim 48, wherein the first end plate further comprises the first articulating surface.

50. (New) The intervertebral disc prosthesis of claim 48, further comprising a second end plate securable to the second vertebral body, wherein the second end plate comprises the second bone engagement surface.

51. (New) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

a first end plate securable to a first vertebral body, the first end plate comprising a first articular surface comprising a first flat portion in at least one cross section;

a second end plate securable to a second vertebral body; and

a nucleus positionable between the first and second end plates, the nucleus comprising a second articular surface that articulates with the first articular surface, the second articular surface comprising, in at least one cross section, a first flattened section positioned between and contiguous with first and second curved sections of the second articular surface, wherein the first flattened section rests against the first flat portion in a relative orientation between the first and second end plates that provides a preferred lordotic angle between the first and second vertebral bodies.

52. (New) The intervertebral disc prosthesis of claim 51, wherein the second end plate comprises a third articular surface, the third articular surface comprising a second flat portion in at least one cross section, wherein the nucleus comprises a fourth articular surface that articulates with the third articular surface.

53. (New) The intervertebral disc prosthesis of claim 52, the fourth articular surface comprising, in at least one cross section, a second flattened section positioned between and contiguous with first and second curved sections of the fourth articular surface, wherein the second flattened section rests against the second flat portion in a relative orientation between the first and second end plates that provides a preferred lordotic angle between the first and second vertebral bodies.

54. (New) The intervertebral disc prosthesis of claim 51, wherein an anterior portion of the nucleus has greater thickness than a posterior portion of the nucleus to correct lordosis, wherein the preferred lordotic angle is greater than zero.

55. (New) The intervertebral disc prosthesis of claim 51, wherein the preferred lordotic angle is selected from the group consisting of 0, 3 and 6 degrees.

56. (New) The intervertebral disc prosthesis of claim 51, wherein at least one of the first and second end plates further comprises a stop member positioned to abut the vertebral body to prevent the prosthesis from migrating from its intended position between the first and second vertebral bodies.

57. (New) The intervertebral disc prosthesis of claim 56, wherein the stop member comprises a flange, the flange comprising at least one hole shaped to receive a fastener to further secure the end plate to the vertebral body.

58. (New) An intervertebral disc prosthesis for replacing the natural disc of a human spine, comprising:

- a first end plate securable to a first vertebral body, comprising:

 - a plurality of bone engagement features shaped to penetrate bone; and

 - a first articular surface comprising a flat portion in at least one cross section;

- a second end plate securable to a second vertebral body, comprising:

 - a plurality of bone engagement features shaped to penetrate bone; and

 - a second articular surface that is substantially entirely flat; and

- a nucleus positionable between the first and second end plates, the nucleus comprising:

 - a third articular surface that articulates with the first articular surface, the third articular surface comprising, in at least one cross section, a first flattened section positioned between and contiguous with first and second curved sections of the third articular surface, wherein the first flattened section rests against the flat portion in a relative orientation between the first and second end plates that provides a preferred lordotic angle between the first and second vertebral bodies, the nucleus further comprising a fourth articular surface that articulates with the second articular surface to permit medial-lateral and anterior-posterior articulation between the nucleus and the second end plate.

59. (New) The intervertebral disc prosthesis of claim 58, wherein the fourth articular surface comprises a second flattened section.

60. (New) The intervertebral disc prosthesis of claim 58, wherein an anterior portion of the nucleus has a greater thickness than a posterior portion of the nucleus to provide the preferred lordotic angle.

61. (New) The intervertebral disc prosthesis of claim 58, wherein at least one of the first and second end plates further comprises a stop member positioned to abut the vertebral body to prevent the prosthesis from migrating from its intended position between the first and second vertebral bodies.

62. (New) The intervertebral disc prosthesis of claim 61, wherein the stop member comprises a flange, the flange comprising at least one hole shaped to receive a fastener to further secure the end plate to the vertebral body.

63. (New) The intervertebral disc prosthesis of claim 58, wherein the second articular surface comprises a trough, wherein the trough is larger than the fourth articular surface in at least one of the anterior-posterior and medial-lateral dimensions to permit translation between the nucleus and the second end plate.